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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional)
PER-005-PAP

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)]

on May 12, 2008

Signature Barbara Kelly 5/12/08

Typed or printed name Barbara Kelly

Application Number	Filed
10/658,154	September 8, 2003

First Named Inventor: Burgener, et al.

Art Unit: 2816	Examiner: Englund, Terry Lee

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

- ☐ applicant/inventor.
- ☐ assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)
- ☒ attorney or agent of record. Registration number 42,625
- ☐ attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____

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May 12, 2008 5/12/2008
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted.

PER-005-PAP
Appl. No. 10/658,154

Reply Date: May 12, 2008
Pre-Appeal Brief Request for Review

In re application of: **Burgener, et al.**

Serial No.: **10/658,154**

Filed: **September 8, 2003**

Group Art Unit: **2816**

Examiner: **Terry L. Englund**

Confirmation No.: **5658**

For: **Low Noise Charge Pump Method and Apparatus**

In accordance with 37 C.F.R. 1.8, I, Barbara S. Kelly, hereby certify that this correspondence and all its attachments are being deposited on **Monday, May 12, 2008** with the U.S. Postal Service with sufficient postage as First Class mail in an envelope addressed to Mail Stop AF, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Barbara Kelly 5/12/08
Barbara S. Kelly

Mail Stop AF
Commissioner for Patents
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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Dear Sir:

No amendment is filed with this paper, but a two-month extension petition, a Notice of Appeal, and a fee authorization are attached. Review is requested of certain grounds relied upon by the Examiner to finally reject claims of the subject application, particularly considering the errors of examination set forth in the remarks below. The first four asserted errors preclude almost all grounds relied on by the Examiner from supporting *prima facie* obviousness of any rejected claim. In view of these asserted errors, the Examiner is respectfully requested to withdraw the affected rejections, and/or to correct the asserted errors prior to permitting the appeal to proceed to the Board of Patent Appeals and Interferences.

ERROR 1: Reliance upon circuitry that is not a charge pump, as if it were a charge pump.

Multiple grounds of rejection set forth by the Examiner rely upon Figures 15A and/or 15B of Imamiya as a "charge pump." Each ground of rejection asserts that it would be obvious to combine such figure with other, non-charge pump prior art to render obvious claims of the Applicants. The proposed combinations would result, at best, in a circuit which, like Figures 15A and 15B, fails to conform to the requirements of any of the Applicants' claims.

Charge pumps, as claimed by the Applicants, have as their central purpose the output of a voltage supply. Claim 1, for example, recites "[A]pparatus for generating an output voltage supply" and refers to said output supply in the body of the claim. Each other independent claim includes language to similar effect. The "potential converters" of Figs. 7, 15A, 15B of Imamiya are each designated by reference designator "**5**", and the use of their output is shown in

Figs. 4 and 18 (controlling QN1), and Figs. 14 and 16 (driving C1). Regardless of what the Examiner calls these circuits, these "potential converters" do not produce "an output voltage supply" as required. They thus fail to satisfy the basic requirements of a charge pump as claimed by the Applicants.

Further, no person of ordinary skill would refer to a potential converter as a "charge pump." Imamiya distinguishes "potential converters" (designators 5, 5a, 5b, shown in Figs. 7, 15A, 15B, and used in Figs. 4, 14, 16 and 18) from "charge pumps" (designators 1, 1a, 1b, 1C, shown in Figs. 5, 10 and 14 and used in Fig. 4). Consistent with the Applicants' terminology, all circuits Imamiya refers to as "charge pumps" have an output voltage supply, while all circuits referred to as "potential boosters" have an output control waveform (rather like a high voltage clock output). None of the "potential boosters," including those of Figs. 15A and 15B, has an output voltage supply as required by Applicants' claims. Moreover, Pfiffner (a sample and hold signal level comparator "S/H"), Ito (a voltage controlled oscillator "VCO"), and Yamashiro (a Class B amplifier) all fail to have an output voltage supply as well, and thus cannot begin to remedy the deficiency of the Examiner's reliance on Imamiya. Therefore, the Examiner's rejections of Claims 1-10, 12-19, 28-41, 43-49, 54-59 and 70-71 over Imamiya all fail to establish *prima facie* obviousness.

The Applicants remarked on this error in the Amendment submitted September 17, 2007 ("the previous Response", paragraph bridging pages 18-19 and the subsequent paragraph). Remarks in the previous Response (paragraph bridging pages 19-20) also point out the presence of charge pumps in Imamiya, and provide reasons why those charge pumps also fail to render obvious any claimed invention.

ERROR 2: Assuming that omitted details will be replaced by details contrary to charge pump art.

The Examiner acknowledges that the field of charge pumps is crowded. All integrated circuit charge pumps use clocks, and dozens of the charge pump references of record disclose clock waveforms and design details. Some references, however, omit such clock details. The Examiner asserts that this is because such information is well known in the art (page 46 lines 5-10 of the current Office Action). The Applicants agree, and point to the numerous examples of such details that are available in the charge pump prior art of record. The Examiner, however, further assumes that a designer will fill in the gaps with details that are not seen in charge pump prior art, selecting it from non-analogous art despite suitable alternatives available in charge pump prior art. Such an illogical assumption clearly indicates improper hindsight analysis.

The Examiner acknowledges that Forbes fails to disclose claimed clock features, yet asserts that a designer would "obviously" select clock features from Ito rather than from one of the dozens of available charge pump references that disclose suitable clock features. The Voltage Controlled Oscillator (VCO) art of Ito has a different classification (*i.e.*, 331 vs. 323), but is especially non-analogous to charge pump art because it provides waveforms that are unsuitable for charge pumps in that they differ from the square or somewhat trapezoidal waveforms that are universally expected in

prior art charge pumps. In the absence of a significant reason to look elsewhere, an ordinary designer would select an oscillator from charge pump prior art because it is known to be compatible with charge pumps, rather than risking an untried design from non-analogous art. The Examiner suggests no reason that would motivate a designer to ignore the known charge pump oscillators in favor of an oscillator, such as that of Ito, never seen in prior art charge pumps. An ordinary designer would not select a clock from the VCO art of Ito except by using the Applicants' claims as a blueprint, which is improper hindsight, but would choose from the many options available in charge pump prior art.

The Applicants chose the claimed oscillator features due to an inventive idea that waveforms that were previously avoided might, surprisingly, improve charge pumps for their purposes. Prior art charge pump clock waveforms are square, or at least trapezoidal. The Applicants realized that clock waveforms that were more rounded than had ever before been thought suitable could reduce charge pump noise. As a result of this realization, the Applicants surprisingly prefer clocks that are not found in the charge pump prior art, and which are even expressly eschewed. In particular, the Applicants prefer, and claim, ring oscillators having not more than three stages, despite the fact that no charge pump reference of record suggests ring oscillators having less than five stages, and despite the fact that Hara expressly teaches that ring oscillators should include at least five stages. The prior art provides no teaching that would lead an ordinary designer to select this required feature from the non-analogous VCO art of Ito.

Therefore, Ito and Forbes together fail to support *prima facie* obviousness of rejected claim 1-2, 4, 9-10, 12-14, 16-17, 28-33 36-41 or 43-45 (pages 23-29 of the current Office Action), which each require a ring oscillator not suggested in the charge pump prior art. Forbes cannot extend the prior art of charge pumps by omitting material.

ERROR 3: Assuming features not taught in Yamauchi.

Beginning on page 29 of the current Office Action, the Examiner rejects independent Claims 1 and 43, and claims depending therefrom, over Tasdighi in view of Yamauchi. He relies upon Yamauchi for the claimed requirement for a ring oscillator having not more than three cascaded inverting sections. However, Yamauchi fails to suggest such a limitation to not more than three cascaded sections. The Examiner merely states (page 30 lines 6-8 of the current Office Action) that Yamauchi is evidence of "a ring oscillator with an odd number of driver sections, which includes three sections," and thus avoids stating that Yamauchi teaches the noted limitation. A large ring oscillator includes not only three stages, but many more as well.

Yamauchi uses a conventional drawing technique to represent more stages than can practically be shown in a drawing. The first two stages are drawn to establish the pattern; then an ellipsis " . . . " to represent omitted stages is substituted for each line, and finally a last stage is drawn. While the drawing implies that an oscillator will have more than three stages, Yamauchi neither suggests nor implies that a charge pump oscillator should be limited to having less than five stages.

The limitation to "not more than" three stages in a ring oscillator is not taught, disclosed or fairly suggested in the Yamauchi reference, which therefore cannot be relied upon as showing such limitation to support *prima facie* obviousness. As such, all of the rejections over Tasdighi in view of Yamauchi (pages 29-34 of the current Office Action) are invalid and should be withdrawn.

ERROR 4: Rejecting claims for indefiniteness without regard to the correct legal standard.

Independent Claims 12 and 28, as well as dependent Claim 20, require that the charge pump clock output be "substantially sine-like." The Examiner rejects Claims 12, 20, 28 and their dependent claims as indefinite, stating that the phrase "substantially sine-like" is relative and therefore indefinite. The Examiner's statement implies that all relative terms are indefinite, which is utterly incorrect. The entire MPEP subsection 2173.05(b), including 1380 words covering almost four full columns of text, is devoted to distinguishing improper relative terms from perfectly acceptable terms.

The use of "substantially" is expressly condoned as a common practice in MPEP section 2173.05(b)(D), and this principle has been repeatedly upheld in court cases, such as those cited in that MPEP section, which are binding authority for USPTO examiners.

A "sine" is a waveform of precise mathematical definition that is well known to every person of even modest skill in the art. As is clear, the phrase requires that the waveform be substantially like a sine. Real waveforms necessarily deviate finitely from the mathematical ideal of sine waves. Consequently, a term such as "substantially" sine-like is necessary to cover any real-world waveforms. There simply can be no legal objection to the definiteness of one term that is so narrow that it exists only as an ideal, modified by the term "substantially" that is expressly condoned for such slight broadening. Moreover, every practicing electrical engineer understands what is meant by "substantially sine-like."

"Substantially sine-like" could, under some circumstances, be held indefinite if there is very close prior art. However, the Examiner has identified no prior art clock waveform that is even reasonably close to being "substantially sine-like," as that term would be easily understood by anyone of ordinary skill in the art.

The correct legal standard: Claim language does not fail to satisfy the requirements of 35 USC 112 paragraph 2 unless the language is "insolubly ambiguous" (*see, e.g.*, Bancorp Servs., L.L.C. v. Hartford Life Ins. Co., 359 F.3d 1367, 1372 (Fed .Cir. 2004)). A precise mathematical term that is flexibly modified to encompass real-life waveforms by means of an expressly condoned claim term "substantially," and which, moreover, is easily understood by persons of ordinary skill in the art, simply cannot fail to satisfy that standard.

Accordingly, Claims 12, 20 and 28 are not indefinite under the correct legal standard.

ERROR 5: Objecting to drawings for failing to show all possible embodiments.

On page 2 of the current Office Action, the Examiner requires the drawings to be amended to show a single-stage ring oscillator, because that number of stages is "covered" by a limitation to a ring oscillator having "not more than three stages."

In relevant part, 37 CFR 1.83 states: "The drawing in a nonprovisional application must show every feature of the invention specified in the claims." The Applicants' Figure 5 shows a three-stage ring oscillator, which is an example of the claimed feature "a ring oscillator having not more than three inverter stages," and thus satisfies Rule 83. Illustrating all embodiments "covered" by the claims would wastefully engorge many patents. The Examiner is respectfully requested to withdraw this improper requirement.

Conclusion

The examination errors described in the remarks set forth above render invalid substantially all of the rejections the Examiner has made final in the current Office Action.

The Applicants have created a very quiet charge pump, but it is impossible to claim a "quiet" charge pump. As such, the several features that distinguish this charge pump from conventional charge pumps are appropriately claimed to obtain the protection to which their invention is properly entitled. The Examiner is respectfully requested to recognize the Applicants' inventiveness in rejecting charge pump design conventions, and to allow all pending claims.

The Commissioner is authorized to construe this paper as including a petition to extend the period for response by the number of months necessary to make this paper timely filed. Fees or deficiencies required to cause the response to be complete and timely filed may be charged, and any overpayments should be credited, to our Deposit Account No. **50-0490**.

Respectfully submitted,

5/12/2008
Date: May 12, 2008

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